

Forensic Epidemiology Part II

October 26, 2004

Joint Field Training for Law Enforcement and Public Health Officials on Investigative Responses to Bioterrorism

Prepared by:

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Office of Surveillance and Public Health Preparedness
Bureau of Epidemiology**

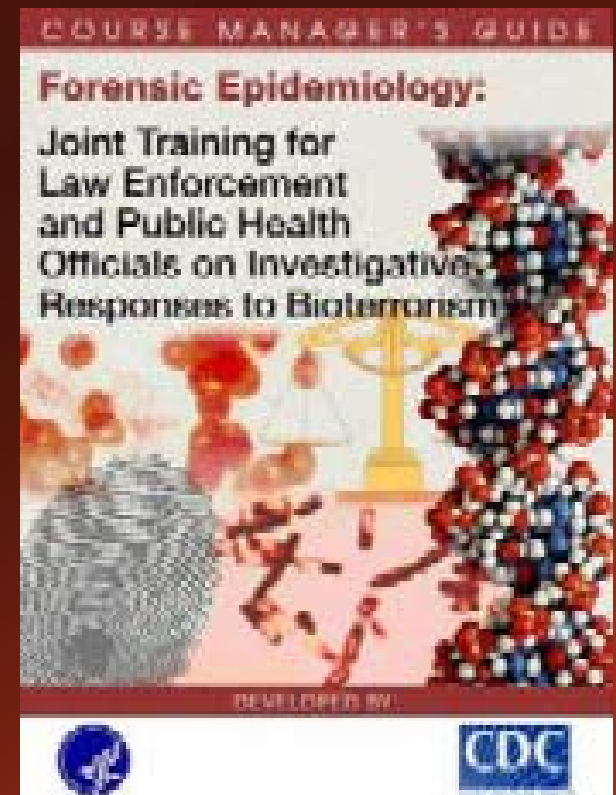


Background: Le Guenno, B. Emerging Viruses,
Scientific American, Oct. 1995

Posted on: ICTVdB, February 2005
<http://ncbi.nlm.nih.gov/ICTVdb/ICTVdB>

Background

- 2002 → CDC, with the US Attorney's Office, FBI, and several other agencies, develop a *Forensic Epidemiology* course for use across the nation
- October 2003 → Southeastern Pennsylvania Regional Bioterrorism Exercise with joint investigation component
- April 2004 → Houston area conducts *Forensic Epidemiology* course
- October 2004 → *Forensic Epidemiology Part II*: Houston Joint Field Training on Investigative Response to Bioterrorism



Source: CDC, February 2005

<http://www.cdc.gov>



Purpose



The purpose of this training drill was to improve the following areas of response:

- Cooperation and understanding between law enforcement and public health
- Interviewing of victims/suspects during a bioterrorism event
- Ability to properly transport clinical samples to the nearest LRN laboratory for testing
- Ability to properly don and doff appropriate PPE
- Familiarity with both a hospital and jail setting

By involving various response and coordination personnel from:

- Local health departments in Harris and the surrounding counties
- Local law enforcement agencies in Harris and the surrounding counties
- FBI

In a simulated outbreak of a viral hemorrhagic fever in Houston, Texas

SCHEDULE OF EVENTS

Forensic Epidemiology Field Investigation Drill

October 26, 2004
7:30 am – 5:00 pm

Houston Veterans Administration Medical Center, VAMC Gym
2002 Holcombe Blvd, Houston, Texas 77054

7:30 – 8:00	Sign-in
8:00 – 8:30	Drill Orientation
8:30 – 8:45	Scenario Briefing
8:45 – 9:00	Veterinarian Presentation
9:00 – 9:30	Laboratory Presentation
9:30 – 9:45	Form Investigation Teams & Distribute Assignments
9:45 – 2:30	Conduct Field Investigations <ul style="list-style-type: none"> ➤ Hospital Interview <ul style="list-style-type: none"> ○ Review Patient Medical Record ○ Don/Doff PPE ○ Interview Patient ○ Request and Obtain Clinical Lab Sample ➤ Jail Interview <ul style="list-style-type: none"> ○ Review Detainee Records ○ Interview Detainee ➤ Transport Clinical Lab Sample <ul style="list-style-type: none"> ○ Complete Submission Form ○ Complete Chain-of-Custody Form
2:30 – 5:00	Hotwash and Debriefing

[illegible]



Source: CitySearch, February 2005
<http://ottosbarbecue.citysearch.com>

Scenario



Source: Internet Dermatology Society, February 2005
<http://www.telemedicine.org>

AGENT: Junin virus (Argentine Hemorrhagic Fever)

PERSON: 148 patrons and employees of Otto's Bar-B-Q and one merchant marine from Brazil

PLACE: Otto's Bar-B-Q (a Bush family favorite)



TIME: Restaurant cases were exposed between Oct. 12-14 and developed illness between Oct. 22-30 (10-16 day incubation time)

SOURCE: A Hizballah terrorist from Argentina came into the United States on a merchant marine vessel and contaminated the condiments bar at Otto's Bar-B-Q in hopes of killing either George W. Bush or his family

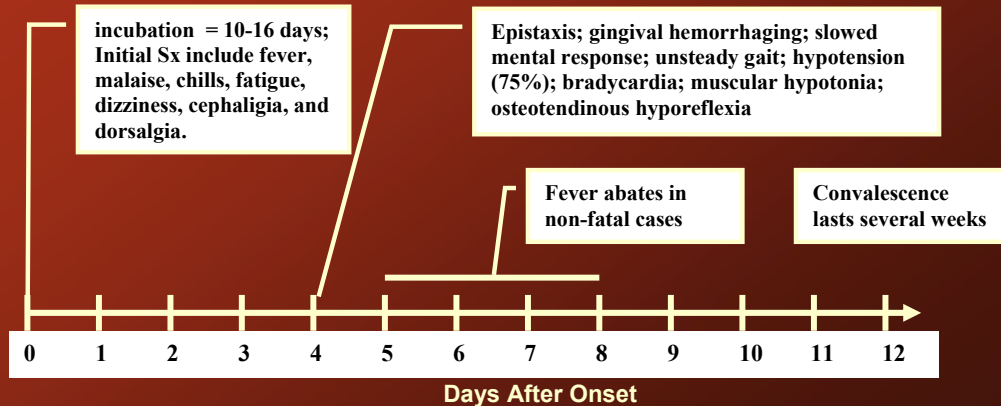
CALENDAR OF EVENTS

October

2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10 *Index case is exposed aboard ship	11 *Ship arrives in port	12 *Terrorist attacks Otto's Bar-B-Q	13 *George Bush Jr. is in town *Terrorist attacks Otto's Bar-B-Q *Threat by Imad Mugniyah	14 *George Bush Jr. is in town *Terrorist attacks Otto's Bar-B-Q	15	16
17	18	19 *Index case & 3 crewmates are arrested	20 *Ramadan starts *Index case becomes ill (incubation = 10 days)	21	22 *1 st patrons of Otto's become ill (incubation = 10 days)	23
24 *Index case is transported to Hope Hospital	25 *Index case dies *Notice unusual increase in patients w/flu-like symptoms	26 *Drill begins *Patients with hemorrhaging observed	27	28	29	30 *Terrorist is found dead
31						

Argentine Hemorrhagic Fever Clinical Presentation



Additional Early Sx: conjunctival congestion, retro-orbital pain, epigastralgia, halitosis, nausea, vomiting, constipation, diarrhea, increased vascularization of soft palate, adenopathy, petechiae on skin & palate, congestive halo on the gums

Additional Severe Sx: hematemesis, melena, pronounced epistaxis & gingival hemorrhaging, muscular tremors in tongue & hands, confusion or excitability, & tonic-clonic convulsive seizures

Dx Signs: leukopenia, thrombocytopenia, albuminuria, & cylindruria



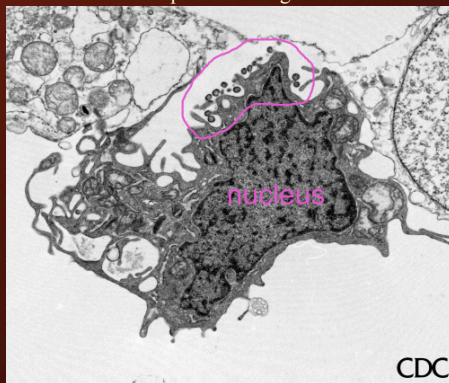
Source: Internet Dermatology Society, February 2005
<http://www.telemedicine.org>



Source: Internet Dermatology Society, February 2005
<http://www.telemedicine.org>



Source: FBI, February 2005
<http://www.fbi.gov>



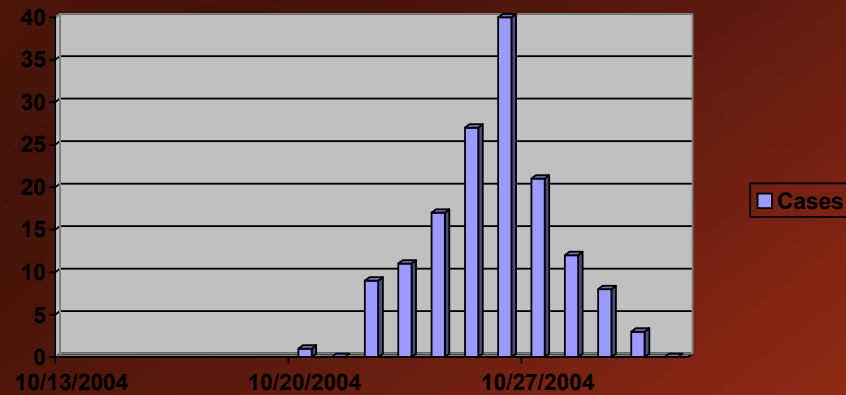
Source: CDC, February 2005
<http://www.cdc.gov>

CASUALTY ESTIMATES

Otto's Bar-B-Q

- **Otto's Bar-B-Q is attacked on 10/12-10/14**
- **Seating for ~ 80 people $\times 1.1 = 88$ patrons per day**
- **88 patrons $\times 3$ days = 264 patrons at Otto's during the attacks**
- **264 patrons $\times 70\% = 185$ patrons ate food from the condiment bar**
- **185 patrons $\times 80\%$ attack rate = 148 people become ill between October 22 and October 31 (~ 50 ill per attack day)**
- **$\sim 79\%$ ($n=117$) of ill will develop symptoms between days 12-14 (10/25-10/29) after exposure**

Figure 1: Epidemic Curve



Case Count by Day

20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct
1	0	9	11	17	27	40	21	12	8	3	0



Achievement of Objectives



- The Completion of objectives was assessed via a group debriefing and evaluation session conducted at the conclusion of the drill
- All teams successfully completed 2 field interviews and were able to abstract enough information to form credible investigation hypotheses
- Participants indicated that interactions between law enforcement and public health professionals were positive and should definitely continue
- Teams successfully characterized the event as a covert bioterrorism attack and point source epidemic
- Most teams were able to discover the probable source of infection for the hospital patient, as well as the link between the index case and hospital patient
- All teams also submitted at least a simulated clinical sample to the Houston Bureau of Laboratory Services with chain of custody form included



Identification of Deficiencies



Regarding Field Interviews

- No regional bioterrorism investigation form
- No specific joint investigation guidelines (specifying such details as team size, organization, access to foreign language translators, who talks when, etc.)
- Too many questions regarding the sharing of confidential information
- Insufficient training on when and how to don/doff PPE
- Unable to record information while in isolation rooms
- Lack of interview space and poor interview acoustics in the jail



Identification of Deficiencies



Regarding Sample Submission

- Parafilm/waterproof tape wasn't used to seal vials
- Inconsistent quality of clinical sample packaging and use of forms
- Clarifications needed on assigning clinical samples an identification number
- No one contacted the laboratory to inform them of incoming clinical samples
- Samples weren't always dropped off at the laboratory's shipping and receiving station



Recommendations



- Provide a regional PPE training course for law enforcement and public health professionals
- Approve a form (or forms) to be used regionally in case of a BT event; attach carbon copies to these forms so they can be enclosed in plastic and used in an isolation room
- Draft regional joint investigation guidelines, taking into account size of teams, organizational structures, and the potential need for translators; include a checklist of needed supplies
- Organize additional joint training opportunities
- Revise all lab forms based on gaps identified during the drill

Further Recommendations

- Research confidentiality issues as they pertain to a bioterrorism investigation and provide participating agencies with documentation
- Provide participants with feedback regarding what they did wrong during the packaging of lab samples
- Retrain and retest hospitals on sample packaging and submission procedures
- Conduct a hands-on sample packaging and handling class for law enforcement and public health professionals at the next forensic epidemiology training drill
- Verify joint investigation procedures are represented in each agency's emergency response plan



Acknowledgments

- FBI
- Houston VAMC
- Harris County Sheriff's Office
- St. Luke's Hospital
- Christus St. Joseph Hospital
- Kingwood Medical Center
- San Jacinto Methodist Hospital
- Conroe Regional Medical Center
- Northeast Medical Center
- Memorial Hermann Southeast Hospital
- Park Plaza Hospital
- The Methodist Hospital
- ICTVdB
- Internet Dermatology Society
- CDC
- Texas Department of State Health Services



Questions?

DRILL DESIGN TEAM AND CONTROLLERS

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